UNITOR

Instruction manual

& spare parts list

AG-PRO 7

AG-PRO 5

AG-PRO 4

AG-PRO SERIES
AIR DRIVEN
ANGLE GRINDERS

Revision date 05/2008

Wilhelmsen Ships Service

1.General Safety and Operation Instruction

1. Unpacking
   When unpacking this product, carefully inspect for any damage that may have occurred during transit. Make sure any loose fittings, bolts, etc., are tightened before putting this product into service.
2. This product is a part of a high-pressure system and the following safety precautions must be followed at all times along with any other existing safety rules.
3. Read all manuals included with this product carefully. Be thoroughly familiar with the controls and the proper use of the equipment.
4. Only persons well acquainted with these rules of safe operation should be allowed to use the air tool.

Do not exceed maximum operation pressure of the air tool (6.2BAR/90 PSI).
The air tool could explode and result in death or serious personal injury.

5. Do not exceed any pressure rating of any component in the system.
6. Disconnect the air tool from air supply before changing tools or attachments, servicing and during nonoperation.
7. Always wear safety glasses during operation.
8. Do not wear loose fitting clothing, scarves, or neckties. Loose clothing may become caught in moving parts and result serious personal injury.
9. Do not wear jewelry when operation any tool Jewelry may become caught in moving parts and result in serious personal injury.
10. Do not depress trigger when connecting the air supply hose.
11. Always use attachments designed for use with air-powered tools.
    Do not use damaged or worn attachments.
12. Never trigger the tool when not applied to a work object. Attachments must be securely attached. Loose attachments can cause serious injury.
13. Protect airlines from damage or puncture.
14. Never point an air tool at oneself or any other person. Serious injury could occur.
15. Check air hoses for weak or worn condition before each use. Make sure all connections are secured.

Release all pressure from the system before attempting to install, service, relocate or performs any maintenance.

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16. Keep all nuts, bolts and screws tight and ensure equipment is in safe working condition.
17. Do not put hands near or under moving parts.
18. Speed Adjustment

    The grinder should never be used to set torque. Use a torque wrench to set the torque. Are equipped with regulators for speed adjustment. To remove nuts, set the regulator to the maximum setting. To install nuts, set the regulator to the minimum to medium setting. Do not over tighten the nuts.
19. Air Hose

    It is not recommended to install a quick coupler between the drill and leader (whip) hose. Using fittings or air hoses, which are too small can create a pressure drop and reduce the power of the tool. For 76.2 mm (3”), 101.6 mm (4”) and 127 mm (5”) grinder, using 9.525 mm (3/8”) I.D. fittings with 6.35 mm (I/4") NPT threads are recommended. For 187.8mm (7”) grinder, using 12.7 mm (1/2”) I.D. fittings with 9.525 mm (3/8”) NPT threads are recommended.

    Most compressors are shipped with a short, 6.35 mm (1/4") I.D. hose. For proper performance and more convenience, use a 9.525 mm (3/8") I.D. hose. Hoses longer than 15.24 m (50 feet) should have a 12.7 mm (I/2") I.D.

Never carry a tool by the hose or pull the hose to move the tool or a compressor. Keep hoses away from heat, oil and sharp edges. Replace any hose that is damaged, weak or worn.

20. Storage

    The grinder must be lubricated before storing. Following the air motor lubrication Instructions with an exception to step 4. Only run the hammer for 2 to 3 seconds instead of 20 to 30 seconds because more oil needs to remain in the drill when storing.

2.Particular Safety Instruction

1. Information of Noise Level
   (1) The noise level at the operator's position is about：
      Sound Pressure Level：__83.0 ~108.7__ dB(A).
      Sound Power Level： __95.7 ~ 119.5__ dB(A).
   (2) Reference standard：**ISO** 3746.
   (3) Always wear ear protectors during operation.

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2. Information of Vibration Level

(1)The vibration level at the handle is about： 1.792 ~ 5.706 m/s^2.

(2)Reference standard：EN 28662-1.

3. Information of Temperatures

(1)The temperatures at the handle (8 hours/Operation) is 30 ℃.

4.Safety Information

Rated rotational speed of the spindle is 5000 ~ 70000 R.P.M.

5. Safety Information

a. General

(1)The Grinder shall be stored in a safe way.

(2)After the control device has been released, it is recommended that the grinder shall be laid down in a suitable position.

(3)Only lubricants recommended by the manufacturer shall be used.

(4)Rest after continuous operation.

b. Potential injuries

Warning against the following hazards:

(1) Cutting and severing.

(2) Drawing in or trapping of long hair, loose clothing.

(3) Eye injuries.

(4) A whipping compressed air hose.

c. Grinding wheel

(1) Check that maximum operation speed of the abrasive product converted to r/min. is equal to or greater than the rated speed of the spindle.

(2) Ensure that the wheel dimensions are compatible with the grinder and that the wheel fits the spindle.

(3) Ensure that the rated type and size of the wheel exactly matches the thread type and size of the spindle.

(4) Grinding wheels shall be stored and handled with care in accordance with manufacturer's instructions.

(5) Inspect the grinding wheel before use, warn against the use of chipped, cracked or otherwise defective products.

(6) The blotters are used when they are provided with the bonded abrasive product.

(7) Ensure that the abrasive product Is correctly mounted and tightened before use and run the tool at no-load for 30 seconds in a safe position, stop immediately if there is considerable vibration or if other defects are defected.

If this condition occurs, check the grinder to determine the cause.

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6. Explanations Of Warning Signs used For This Tool

The operator's Instruction must be read before work starts	Hearing protection must be worn	Eye protection must be used or safety glasses worn
Direction of rotation Reverse function	Engine oil	Fuel

7. Application

Power tool driving a rotating spindle on which a bonded abrasive product is mounted.

8. The weight of this tools is about：0.44 ~ 2.7 Kgs.

Note：If the weight of this tool exceeds 15Kgs, the following attention shall be paid to：

(1) Be sure that you can afford the weight.

(2) Be sure to wear foot protection, to prevent the risk of impact due to the drop of tool.

3.Maintenance Instruction

1. Lubrication

Proper lubrication is the owner's responsibility. Failure to lubricate the air tool properly will dramatically shorten the life of the tool and will void the warranty.

This grinder requires lubrication before the initial use and before and after each additional use.

2. Grinder requires lubrication throughout the life of the tool and must be lubricated in two separate areas：the air motor and the grinder mechanism. Follow the outlined procedures.

3. Air Motor Lubrication

The motor must be lubricated daily. An air motor cannot be oiled too often.

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Disconnect the grinder from the air supply before lubricating.

1. Disconnect the die grinder from the air supply.
2. Turn the die grinder upside down.
3. Simultaneously (at the same time), pull the trigger and pour a teaspoon of oil in the air inlet. Then, push the forward and reverse button in both directions.

After an air tool has been lubricated, oil will discharge through the exhaust port during the first few seconds of operation. Thus, the exhaust port must be covered with a towel before applying air pressure. Failure to cover the exhaust port can result in serious injury.

4. Connect the grinder to the air supply and cover the exhaust port with a towel. Run the grinder and oil will discharge from the exhaust port when air pressure is applied.
5. Grinding mechanism lubrication
   The grinder should be lubricated monthly.

Disconnect the grinder from the air supply before lubricating.

1. Disconnect the grinder from the air supply.
2. Remove the slotted screw or Allen head screw from the oil porthole on the right side of the tool that has “OIL” stamped below the hole for.
3. Put three teaspoons of air tool oil in the oil porthole. Replace the screw.
4. Reconnect the air supply to the tools and run for 20 to 30 seconds.
   Lubricate the entire tools by rotating upside down and sideways while running the tool.
5. Remove the screw and hold the oil porthole over a suitable container to allow excess oil to drain.
6. If the oil is dirty, repeat the procedure above until the oil comes out clear. Install the screw and tighten. The residual oil remaining in the grinding mechanism chamber is all that is needed for proper lubrication.

Special care has to be taken when assembling the speed governor and any other protective device.

Inspecting spindles, threads and clamping devices regularly in respect of wear and tolerances for location of abrasive products.

Check the speed after each service and maintenance without the wheel on the spindle.

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General Trouble shooting Guide

Symptom	Possible Cause(s)	Corrective Action
Tool runs slowly or will not operate	1. Grit or gum in tool.	1.Flush the tool with air tool oil, gum solvent, or an equal mixture of SAE # 10 motor 011 and kerosene. Lubricate the tool after cleaning.
	2 No oil in tool.	2.Lubricate the tool according to the lubrication instructions in this manual.
	3 Low air pressure	3.Adjust the compressor regulator to tool maximum while the tool is running free.
	4 Air hose leaks	4.Tighten and seal hose fittings if leaks are found.
	5.Pressure drops	5-1.Be sure the hose is the proper size. Long hoses or tools using large volumes of air may require a hose with an I.D. of 12.7 mm (1/2") or larger depending on the total length of the hose. 5-2.Do not use a multiple number of hoses connected together with quick connect fittings. This causes additional pressure drops and reduces the tool power Directly connect the hoses together.
	6 Worn ball bearing in motor	6.Remove and inspect bearing for rust, dirt and grit or worn race. Clean and regress bearing with bearing grease.
Moisture blowing out of tool	1.Water in tank.	1.Drain tank. (See air compressor manual). Oil tool and run until no water is evident. Oil tool again and run 1-2 seconds.
	2.Water in the air lines/hoses.	2-1.Install a water separator/filter. Note: Separators only work properly when the air passing through the separator is cool Locate the separator/filter as far as possible from the compressor. 2-2.Install an air dryer.

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UNITOR AG-PRO 4 B

SPECIFICATIONS：

∗GRINDING WHEEL ---------- 4”
∗AIR PRESSURE ---------- 90 PSI
∗AIR INLET ---------- 1/4” PT(NPT)
∗FREE SPEED ---------- 13,600 RPM
∗HOSE SIZE ---------- 3/8” ID

REF NO.	PARTS NO.	DESCRIPTION	Q'TY	REF NO.	PARTS NO.	DESCRIPTION	Q'TY
1	752281	HANDLE (LEVER TYPE)	1	48	752313	SNAP RING	1
2	752282	VALVE BUSHING❷	1	49	752314	BALL BEARING (606)❶❹	1
3	752283	AIR INLET BUSHING❷	1	50	752315	BALL BEARING (629 Z)❶	2
4	752284	FILTER❷	1	51	752316	BALL BEARING (6202 Z)❶❹	1
5	752285	VALVE BODY CONNECTOR	1	52	752317	O-RING (52)	1
6	752286	VALVE BODY NUT	1	53	752318	FLAT RING (d22×D32×W4)	1
7	752287	SAFETY PIN❷	1	54	752319	SIDE HANDLE	1
8	752288	VALVE LEVER❷	1	55	752320	FLAT WASHER (M8)	1
9	752289	VALVE❷	1	56	752321	SPRING WASHER (M8)	1
10	752290	ROIL PIN (3.5×20)❷	1	57	752322	OUSTER SNEP RING (S-6)❹	1
11	752291	CONE SPRING (10×16×16)❶❷	1	59	752323	EXHAUST STACK	1
12	752292	INNER SNAP RING	1	61	752324	ALLEN HEAD SCREW (M5×35)	1
13	752293	O-RING (13)❶❷	1	66	752325	O-RING (66)	1
14	752294	O-RING (14)❶❷	2	67	752326	GOVERNOR VALVE❸	1
15	752295	SPRING❶❷	1	68	752327	GOVERNOR CAGE❸	1
29	752296	HOUSING	1	69	752328	GOVERNOR SPINDLE❸	1
30	752297	REAR PLATE SPACER	1	70	752329	GOVERNOR WEIGHT❸	1
31	752298	REAR PLATE	1	71	752330	SPRING PIN (Ø3×18)❸	1
32	752299	CYLINDER	1	72	752331	ADJUSTING SPACER (d8×D12×t)❸	1
33	752300	ROTOR	1	73	752332	PIN (Ø2.5×5)❸	1
34	752301	BLADE❶	4	74	752333	SPACER (d8.6×D12×W1.5)❸	1
35	752302	FRONT PLATE	1	75	752334	4” SERIES SPRING❸	1
36	752303	DRIVING GEAR (36)❹	1	79	752336	WHEEL GUARD	1
37	752304	DRIVING GEAR (37)❹	1	80	HEX. BOLT	(not supplied as spare)	1
38	752305	CASING REAR COVER❹	1	81	HEX. NUT	(not supplied as spare)	1
39	752306	CASING FRONT COVER	1	82	WASHER	(not supplied as spare)	1
40	752307	HANDLE ADAPTOR (M8)	1	102	752344	SPANNER 102	1
41	752308	ALLEN HEAD PLUG (1/8” PT)	1	109	756944	SPANNER 109	1
42	752309	ROLL PIN (Ø3×10)	1	110	756945	4” WHEEL SPINDLE (3/8”X24 UNF)	1
43	752310	KEY (3×8)	1	111	756946	WHEEL HOLDER FLANGE	1
44	752311	SPACER (d31×D35×W0.5)❹	1	112	756947	WHEEL NUT FLANGE❶	1
46	752312	ADJUSTING SPACER❹	2				

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To get maximum performance and life of your tool, replace the whole set of parts included in the Spare part kits:

❶ Tune-up kit 722801
❷ Throttle valve overhaul kit 722819
❸ Governor overhaul kit 722827
❹ Bevel gear overhaul kit 722835

Revision date 05/2008

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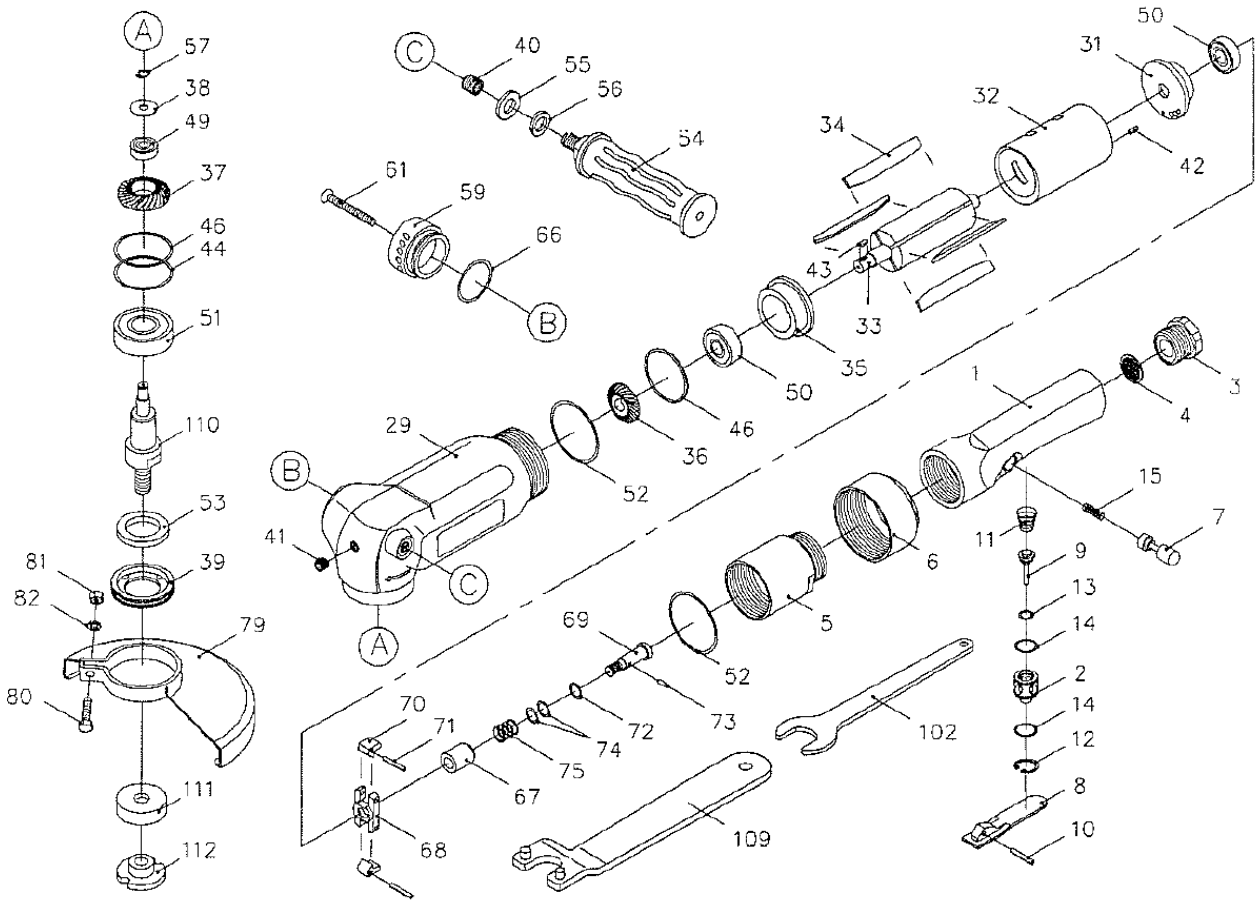

UNITOR AG-PRO 5

SPECIFICATIONS：

＊GRINDING WHEEL ---------- 5”
＊AIR PRESSURE ---------- 90 PSI
＊AIR INLET ---------- 1/4” PT(NPT)
＊FREE SPEED ---------- 10,900 RPM
＊HOSE SIZE ---------- 3/8” ID

REF NO.	PARTS NO.	DESCRIPTION	Q'TY	REF NO.	PARTS NO.	DESCRIPTION	Q'TY
1	752281	HANDLE (LEVER TYPE)	1	52	752317	O-RING (52)	1
2	752282	VALVE BUSHING❷	1	53	752318	FLAT RING (d22×D32×W4)	1
3	752283	AIR INLET BUSHING❷	1	54	752319	DEAD HANDLE	1
4	752284	FILTER❷	1	55	752320	FLAT WASHER (M8)	1
5	752285	VALVE BODY CONNECTOR	1	56	752321	SPRING WASHER (M8)	1
6	752286	VALVE BODY NUT	1	57	752322	OUTER SNAP RING (S-6)❹	1
7	752287	SAFETY PIN❷	1	59	752323	EXHAUST STACK	1
8	752288	VALVE LEVER❷	1	61	752324	ALLEN HEAD SCREW (M5×35)	1
9	752289	VALVE❷	1	66	752325	O-RING (66)	1
10	752290	ROIL PIN (3.5×20)❷	1	67	752326	GOVERNOR VALVE❸	1
11	752291	CONE SPRING (10×16×16)❶❷	1	68	752327	GOVERNOR CAGE❸	1
12	752292	INNER SNAP RING❷	1	69	752328	GOVERNOR SPINDLE❸	1
13	752293	O-RING (13)❶❷	1	70	752329	GOVERNOR WEIGHT❸	1
14	752294	O-RING (14)❶❷	2	71	752330	ROLL PIN (Ø3×18)❸	1
15	752295	SPRING❶❷	1	72	752331	ADJUSTING SPACER (d8×D12×t)❸	1
29	752296	HOUSING	1	73	752332	PIN (Ø2.5×5)❸	1
30	752297	REAR PLATE SPACER	1	74	752333	SPACER (d8.6×D12×W1.5)❸	1
31	752298	REAR PLATE	1	76	752346	5” SERIES SPRING	1
32	752299	CYLINDER	1	90	752347	WHEEL HOLDER FLANGE❸	1
33	752300	ROTOR	1	91	752348	WHEEL GUARD	1
34	752301	BLADE❶	4	92	BOLT	(not supplied as spare)	1
35	752302	FRONT PLATE	1	93	HEX. NUT	(not supplied as spare)	1
36	752303	DRIVING GEAR❹	1	94	WASHER	(not supplied as spare)	1
37	752304	DRIVING GEAR❹	1	95	752349	SNAP RING	1
38	752305	CASING REAR COVER❹	1	96##	752350	5” WHEEL SPINDLE (M8×1.25P)	1
39	752306	CASING FRONT COVER	1	97##	752351	5” WHEEL NUT FLANGE (7/8”)	1
40	752307	HELI SERT (M8)	1	98##	752352	HEX. FLANGE HEAD BOLT (M8×18)	1
41	752308	ALLEN HEAD PLUG (1/8” PT)	1	99##	752353	INNER SNAP RING (R-14)	1
42	752309	ROLL PIN (Ø3×10)	1	100	752354	5” WHEEL SPINDLE (3/8”×24 UNF)	1
43	752310	KEY (3×8)	1	101	752355	WHEEL NUT FL. (3/8”×24UNF)❶	1
44	752311	SPACER (d31×D35×W0.5)❹	1	102	752344	SPANNER 102	1
46	752312	SPACER (d31×D35×t)❹	2	103	752345	ALLEN WRENCH (6 MM)	1
48	752313	SNAP RING	1	106	752356	WHEEL HOLDER FLANGE	1
49	752314	BALL BEARING (606)❶❹	1	107##	752357	5” WHEEL SPINDLE (5/8”×11 UNC)	1
50	752315	BALL BEARING (629 Z)❶	2	108##	752358	WHEEL NUT FLANGE (5/8”×11UNC)	1
51	752316	BALL BEARING (6202 Z)❶❹	1	109	756944	SPANNER 109	1

Optional Parts

402 721985

To get maximum performance and life of your tool, replace the whole set of parts included in the Spare part kits:

❶ Tune-up kit 728683
❷ Throttle valve overhaul kit 722819
❸ Governor overhaul kit 728709
❹ Bevel gear overhaul kit 722835

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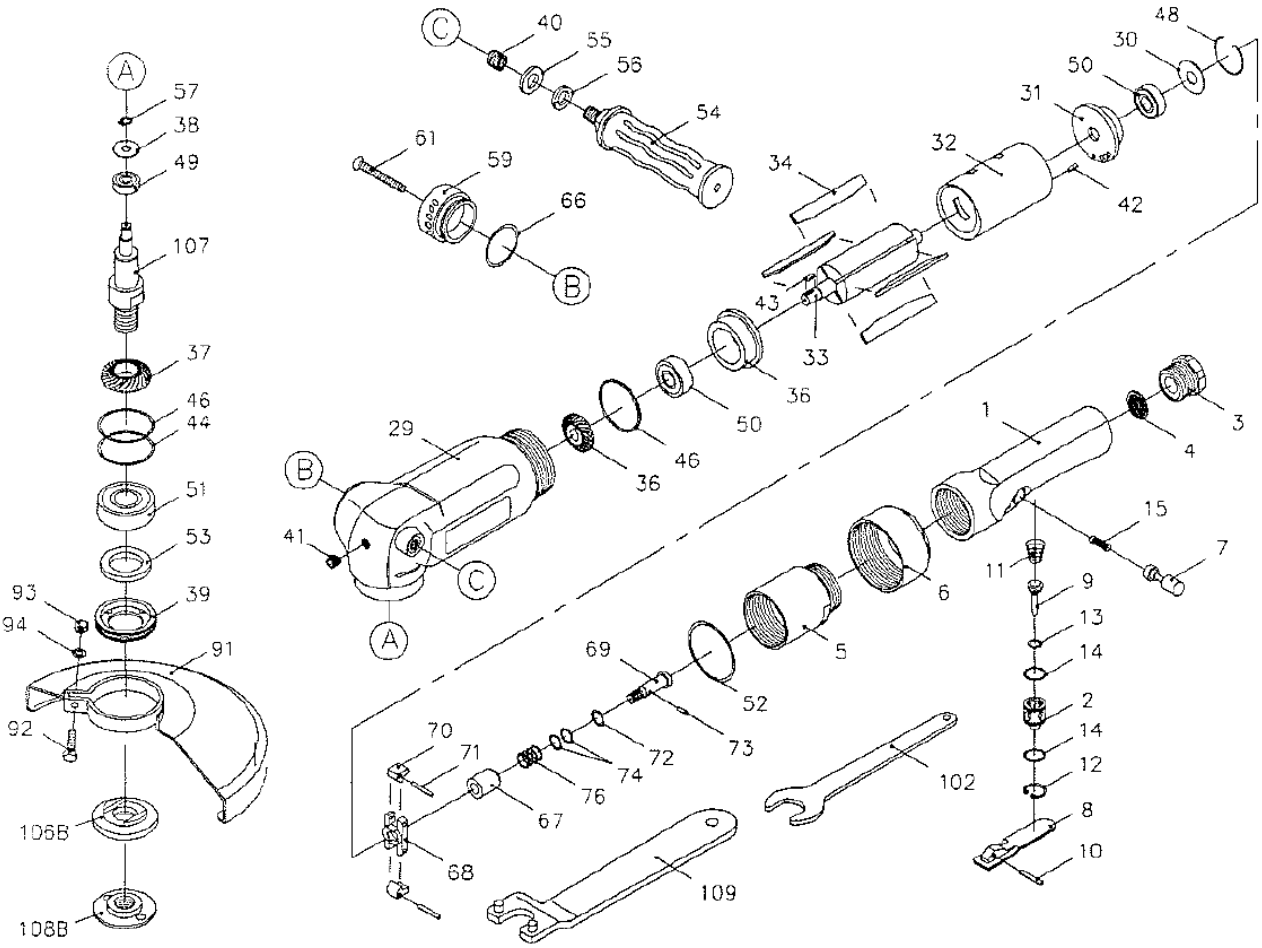

UNITOR AG-PRO 7

SPECIFICATIONS：

∗GRINDING WHEEL ---------- 7”　　∗FREE SPEED ---------- 7,600 RPM
∗AIR PRESSURE ---------- 90 PSI　　∗HOSE SIZE ---------- 1/2” ID
∗AIR INLET ---------- 3/8” PT(NPT)

REF	PART NO.	DESCRIPTION	Q'TY	REF	PART NO.	DESCRIPTION	Q'TY
15	752380	HANDLE (LEVER TYPE)	1	56	752415	DRIVEN GEAR ❹	1
16	752381	AIR INLET BUSHING❷	1	57	752416	CASING FRONT COVER	1
17	752382	VALVE BUSHING ❷	1	58	752417	DEAD HANDLE	1
18	752383	VALVE LEVER ❷	1	59	752418	HEXAGON HEAD BOLD	1
19	752384	VALVE BODY NUT	1	60	752419	HEXAGON HEAD NUT (M6)	1
20	752385	SAFETY PIN ❷	1	61	752420	ALLEN HEAD PLUG	1
21	752386	FILTER ❷	1	62	752421	SPRING WASHER (6MM)	1
22	752387	GOVERNOR VALVE BUS. ❸	1	63	752422	SPRING WASHER (12MM)	1
23	752388	VALVE STEM ❷	1	64	752423	SNAP RING	1
24	752389	SPRING PIN (3.5×24) ❷	1	65	752424	SPRING PIN (Ø3×8L)	1
25	752390	“O” RING ❶❷	1	66	752425	KEY	1
26	752391	SPRING ❶❷	1	67	752426	KEY ❹	1
27	752392	CONE SPRING ❶❷	1	68	752427	SPACER (47×43×1) ❹	1
28	752393	INNER SNAP RING (18)❷	1	70	752428	ADJUSTING SPACER ❹	2
29	752394	“O” RING ❶❷	2	71	752429	ADJUSTING SPACER ❹	2
30	752395	GOVERNOR VALVE	1	72	752430	SPACER (18×13×1)	1
31	752396	GOVERNOR SPINDLE ❸	1	73	752431	HOLICO INSERT (M12×1)	1
32	752397	GOVERNOR CAGE ❸	1	74	752432	OUTER SNAP RING (S-7) ❶❹	1
33	752398	GOVERNOR WEIGHT❸	2	75	752433	BALL BEARING (6001ZZ) ❶	1
34	752399	ROLL PIN (Ø3×20L) ❸	2	76	752434	BALL BEARING (6201ZZ) ❶	1
35	752400	ADJUSTING SPACER ❸	10	77	752435	BALL BEAR. (627 ZZ) ❶❹	1
36	752401	SPRING ❸	1	78	752436	BALL BEARING (6204 ZZ)❶❹	1
37	752402	PIN (Ø3×7L)	1	79	752437	FLAT RING (28×42×5)	1
38	752403	EXHAUST STACK	1	80	752438	“O” RING ❶❸	1
41	752404	ALLEN FLAT HEAD BOLT	1	88	756912	WHEEL SPINDLE	1
42	752405	“O” RING	1	89	756902	WHEEL HOLDER FLANGE	1
47	752406	CASING	1	89c	756903	WHEEL HOLDER FLANGE	1
48	752407	CYLINDER REAR PLATE	1	90	756904	WHEEL GUARD	1
49	752408	CYLINDER	1	91	756905	WHEEL NUT FLANGE	1
50	752409	ROTOR	1	92	756906	ALLEN HEAD SCREW	1
51	752410	ROTOR BLADE ❶	4	93	756907	SPRING PIN	1
52	752411	FRONT PLATE	1	94	756908	INNER S. RING ❹	1
53	752412	REAR PLATE SPACER	1	99	756909	SPANNER (24MM)	1
54	752413	WHEEL SPINDLE R. COVER ❹	1	100	756910	SPANNER (6x30x17)	1
55	752414	DRIVING GEAR ❹	1	101	756911	ALLEN WRENCH (4MM)	1

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To get maximum performance and life of your tool, replace the whole set of parts included in the Spare part kits:

❶	Tune-up kit	722843
❷	Throttle valve overhaul kit	722868
❸	Governor overhaul kit	722876
❹	Bevel gear overhaul kit	722884

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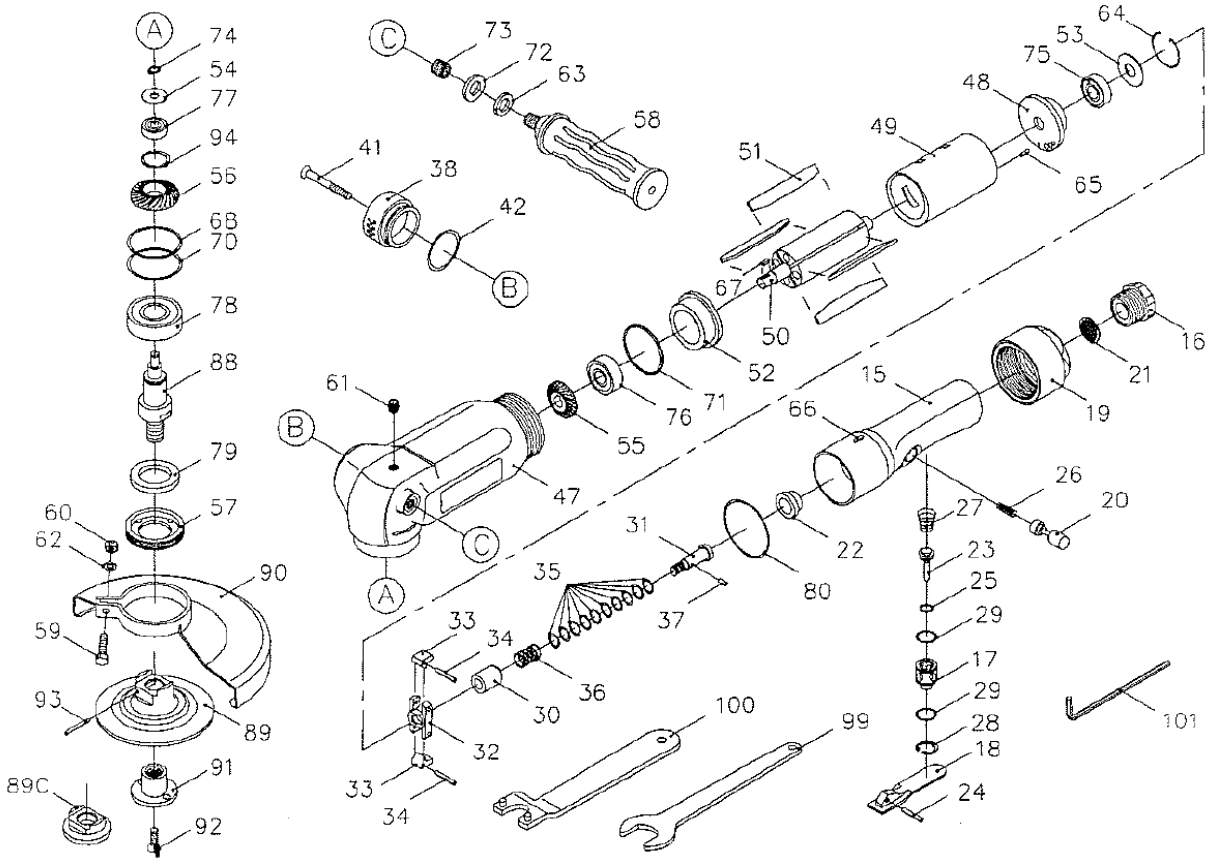

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Instruction manual

& spare parts list

Fraser/surrey Gaspe Gros Caouna Halifax Hamilton Harbour Grace H Westminster Bc Pictou/halifax Pointe Aux Pic.quebec Port Alfred Port C Port Of Quebec Port Weller Powell River Prince Rupert Roberts Bank Sa halifax Squamish St. Catherines St.john's, Nfld St.romuald Stephens alleyfield Vancouver Victoria Weymouth Windsor Yarmouth Ancud / Coronel Corral Huasco Las Ventanas Lirquen Lota Penco Puerto Montt Puerto Williams Punta Arenas Quintero San Antonio San Vicente Talcahuano Tocopilla Valparaiso Antilla Bahia Honda Banes Baracoa Cabanas Caibarien Cardenas Casilda Ceiba Hueca Cienfuegos Guantanamo Guayabal Havana Isabel De Sagua Manati Mariel Media Luna Moa Nicaro Niquero Nuevitas Pilon Puerto Padre Santiago De Cuba Sigloo **Genoa** Finn Tanamo Tunas De Zaza Vita Balao Esmeraldas Guayaquil La Libertad Manta Puerto Bolivar Freeport/bahamas Guam Mahdia Acapulco Campeche Ciudad Del Carmen Coatzacoalcos Cozumel Dos Bocas Ensenada Guaymas La Paz Lazaro Cardenas Mazatlan Progreso Puerto Vallarta Salina Cruz Tampico Topolobampo Tuxpan Vera Cruz Bonaire Bullen Bay Curacao Aguadulce Almirante Armuelles Bahia Las Minas Balboa Cristobal Manzanillo Int.term. Vacamonte Callao Chimbote Ilo Matarani Paita Pisco Guayama Guayanilla Mayaguez Ponce San Juan Yabucoa St. Vincent Chaguaramas La Brea Point Fortin Point Lisas Pointe-a-pierre Port Of Spain Tembladora Aberdeen,wa Alameda Albany,n.y. Alexandria, Va Algiers Point Amelia Anacortes, Wa Anchorage,ak Annapolis,md Antioch Aransas Pass Tx Astoria, Or Baltimore Baton Rouge Bayonne Baytown Beaumont Bellingham, Ma Bellingham, Wa Benicia, Ca Boston, Ma Bridgeport Bridgeport, Conn Brooklyn, Ny Brownsville Tx Brunswick Brunswick, Ga ucksport,me Buras Camden Camden, Nj Cameron La Chalmette Charleston, Sc Cheasapeake Chester Chicago Claymont Convent Coos Bay, Or Corpus Chr.tx Crockett Darrow Davant Deer Park Delaware City Destrehan Donaldsonville Dutch Harbor, Ak Eastport, Me Eureka Everett, Wa Fairless Hills Famagusta Ferndale wa Freeport Tx Galveston Tx Garyville Geismar Georgetown, Sc Gloucester, Nj Good Hope Gramercy Grand Isl aii Hoquiam, Wa Houma Jacksonville Kalama Kalama, Wa Kenai Key W a Loop Terminal Los Angeles Manchester, Wa Manhattan, Ny M ad City, Nc Morgan City Morrisville, Pa Myrtle Grove Naples Nederland Tx New Haven, Conn New Iberia New London New Orleans New York Newington, Nh Newport News, Va Newport, Or Newport, Ri Nikiski Norco Norfolk Oakland Olympia, Wa Orange, **Rotterdam** Tx Palm Beach Panama City, Fl Pasadena Pascagoula, Ms Paulsboro, Nj Pennsauken, Nj Pensacola, Fl Petaluma Philadelphia Piney Point, Md Pittsburg Plaquemine Point Comfort Tx Port Allen Port Angeles, Wa Port Arthur Tx Port Canaveral Port Everglades Port Hueneme Port Isabel Tx Port Manatee, Fl Port Neches Tx Port Royal, Sc Port St. Joe, Fl Port Townsend, Wa Portland, Me Portland, Or Portsmouth Portsmouth, Nh Providence, Ri Queens, Ny Redwood City Reserve Revere, Ma Richmond Richmond, Va Sacramento Salem Salem, Ma San Diego San Francisco Sandwich, Ma Savannah Searsport, Me Seattle Seward Sparrows Point St.petersburg, Fl St.rose Staten Island, Ny Stockton Tacoma, Wa Tampa Texas City The Bronx, Ny The Loop Valdez Vancouver, Wa Venice West Palm Beach Westville, Nj Wilmington, Ca Wilmington, De **Houston** Wilmington,nc Yonkers, Ny Yorktown, Va Fray Bentos Jose Ignacio Montevideo Nueva Palmira Amuay Bay Bajo Grande Cumarebo El Palito El Tablazo Guanta Guaranao Jose Bay La Guaira La Salina Maracaibo Pertigalete Puerto Cabello Puerto La Cruz Puerto Miranda Puerto Ordaz Punta Cardon Punta De Palmas Punto Fijo San Lorenzo, Vz St.croix Aeroskobing Assens Bagenkop Bogense Copenhagen Ebeltoft Enstedvaerket Havn Esbjerg Fakse Ladeplads Havn Fredericia Frederiksund Frederiksvaerk Fredrikshavn Faaborg Gedser Great Belt Grenaa Graasten Gulfhavn Haderslev Halsskov Hanstholm Helsingor Hirtshals Hobro Holbaek Horsens Kalundborg Kertminde Koge Kolding Korsor Lemvig Mariager Marstal **Oslo** Middlefart Naestved Nakskov Nyborg Nykobing Falster Nykobing Mors Nykobing Skjaelland Odense Orehoved Falster Randers Ronne Rudkobing Sakskobing Skaelskor Skaerbaek Skagen Skive Sonderborg Stege Stigsnaesvaerkets Havn Svendborg Studstrupvaerkets Havn Thisted Thorshavn Vejle Vordingborg Aabenraa Aalborg Aarhus Kunda Loksa Muuga Paldiski Paljassaare Parnu Tallinn Dalsbruk Hamina/fr.havn Hanko/hangoe Helsinki Ingaa/inkoo Jakobstad Kalajoki Kantvik Kaskinen/kasko Kemi Kemio Kokkola/karleby Kotka Koverhar Kristinestad Lappvik Lovisa Mariehamn Merikarvia Nystad Naantali Oulu Pargas Pori Porvoo/borgaa Rauma Raahe/brahestad Skoeldvik Tammisaari Teijo Tolkis Torneaa Turku Valkom/valko Vaasa Akureyri Isafjørdur Reykjavik Arklow Aughinish Bantry Cork Drogheda Dublin Dun Laoghaire Dundalk Foynes Galway Limerick Moneypoint Ringaskiddy Tarbert Waterford Liepaja Mersrags Riga Roja Salacgriva Skulte Ventspils Butinge Klaipeda Agnefest Alta **Piraeus** Arendal Asker Askoy Aukra Aure Averoey Bergen Berlevaag Bodoe Boemlo Brattvag Breivika Brevik Baatsfjord Dirdal Drammen Dusavik Egersund Eide Elnesvaagen Eydehavn Fagerstrand Farsund Finnsnes Flekkefjord Floroe Flaam Fosnavaag Fraena Fredrikstad Frei Gamvik **Genoa** Geiranger Gjemnes Glomfjord Gravdal Grimstad Gudvangen Halden Halsa Hammerfest Harstad Haugesund Hellesylt Heroeya Hjelmeland Hoeyanger Holla Holmestrand Hommelvik Honningsvaag Horten Husnes Jelsa Jessheim Joerpeland Joessinghamn Kambo Karmoey Kirkenes **Singapore** Krageroe Kristiansand Kristiansund Kvinesdal Kyrksaeterora Kaarsto Larvik Leknes Lillesand Lyngdal Mandal Mehavn Mo I Rana Molde Mongstad Mosjoen Moss Muruvik Maaloey Namsos Narvik Nesset Odda Oelen Oersta Orkanger Porsgrunn Rafnes Randaberg Raubergvika Risoer Sandefjord Sandnes Sandnessjoen Sarpsborg Sauda Skien Skjervoey Slagen Slagentangen Smoela Soevik Sola Sorreisa Sortland Stavanger Stord Sture Sunndalsoera **Dubai** Surnadal Svelgen Svolvaer Tananger Tau Thamshamn Tingvoll Tjeldbergodden Toensberg Tofte Tomrefjord Tromsoe Trondheim Tustna Tvedestrand Tyssedal Tysvaer Ulsteinvik Vadsoe Vardoe Verdal Vik Volda Aagotnes Aaheim Aalesund Aalvik Aardal i Ryfylke Aardalstangen Gdansk Gdynia Kolobrzeg Police Swinoujscie Szczecin Arkangelsk Baltiysk De Kastri Kaliningrad Kandalaksha Kavkaz Kronshtadt Lomonosov Murmansk Nakhodka Novorossiysk Primorsk Sakhalin Sakhalin Severomorsk St. Petersburg Svetlyi Taman Temruk Temryuk Tuapse Vladivostok Vostochniy, Port Vostochnyi Vyborg Bohus Brofjorden Falkenberg Gavle Gothenburg Hallstavik Halmstad Helsingborg Hoganas Holmsund Hudiksvall Iggesund Kalmar Karlshamn Karlskrona Karlstad Koeping Landskrona Lidkoping Lilla Edet Luleaa Lysekil Malmoe Mariestad Marstrand Munkedal Norrkoeping Norrsundet Norrtalje Nynashamn **Rotterdam** Ornskoldsvik Oskarshamn Oxelosund Pitea **Shanghai** Simrishamn Skarhamn Skelleftehamn Skutskar Slite

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